



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,478	08/24/2004	Akihiko Tanigaki	2004-1242A	4000

513 7590 12/14/2006

WENDEROTH, LIND & PONACK, L.L.P.  
2033 K STREET N. W.  
SUITE 800  
WASHINGTON, DC 20006-1021

EXAMINER

HOGAN, JAMES SEAN

ART UNIT	PAPER NUMBER
----------	--------------

3752

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/505,478	<b>Applicant(s)</b> TANIGAKI ET AL.	
	<b>Examiner</b> James S. Hogan	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-5, 7-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) 6 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Response to Arguments***

Applicant's arguments filed October 12, 2006 have been fully considered but they are not persuasive. The argument presented by using the prior art applied by the Examiner with measured angles and distances does not constitute an argument that will put the application into a condition for Allowance. Presently, the amended claim attempts to narrow the dimensional proportions of diameters in a nozzle to derive a ratio not less than 3. However, the prior art of Schaming makes no mention of drawing scale, either implied or discovers, and further states (Col. 3, line 40) "the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention". Therefore, the rejection of the claims as previously presented shall remain, and are listed again below.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 7-12, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,365,758 to Schaming.

Regarding claims 1-4,12, and 14 Schaming teaches a descaling nozzle comprising a elliptical discharge orifice (33) opening at a concave surface or concave area (36) of a front end, a tapered segment (at 33, figure 2) extending towards the upstream side from the discharge orifice, and a large-diameter segment (30) continuing

Art Unit: 3752

with the tapered segment. Schaming does not teach the taper angle being between  $30^\circ$  to  $80^\circ$ , nor is a definitive diameter of the large segment in regards to the minor diameter of the nozzle orifice mentioned, however, in light of the compared Figure 2 versus Figure 2 of the instant application, it would appear to be well within the scope of one having ordinary skill in the art at the time the invention was made understood the tapered segment to have an angle of  $30^\circ$  to  $80^\circ$ , or even  $40^\circ$  to  $60^\circ$ , and to have compared the minor diameter of the elliptical discharge orifice and the major diameter of the larger segment above the tapered area and derived a number not less than 3, but less than 7, or less than 6, in order to optimize spraying in a descaling nozzle. Similarly, as per claim 5, the nozzle of Schaming can operate at 2000psi (13.79 Mpa) (Col 3, line 18), and is seen to be capable of performing at a flow rate of 40 to 200 liters/minute. As per claim 7 and 14, the flow path of the nozzle comprises a elliptical discharge orifice (33) opening at a concave surface or concave area (36) of a front end, a tapered segment (at 33, figure 2) extending towards with a possible taper angle of  $40^\circ$  to  $60^\circ$  and the cylindrical flow path extending from the upstream of the tapered flow path with the inner diameter of the upper segment being substantially the same. As per claim 8, the elliptical discharge orifice is fully capable for being of a size where the ratio of the major diameter relative to the minor diameter is 1.2 to 2.5 and, as stated previously, and where the ratio  $D1/D2$  of the inner diameter  $D1$  to the minor diameter  $D2$  of the discharge orifice is 4 to 6. As per claim 9 and 15, where the nozzle of Shaming has a nozzle tip (32) fitted to a front end, and where the nozzle tip has an elliptical discharge orifice (33) opening at a concave surface or concave area (36) of a front end, a tapered

Art Unit: 3752

segment (at 33, figure 2) creating a conical flow path spreading at a predetermined taper angle towards the upstream side of the discharge orifice, and the concave surface (36) comprises an inclined sidewall which inclines inwardly (See Figure 2, at 35) in the radial direction towards the upstream side from the front end. Summarily, Schaming discloses the claimed invention except for definitive nozzle orifice diameters, large segment diameters and conical taper angles. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have held the dimensions of the components making up a descaling nozzle to conform to the desired ratios, since it has been held that discovering an optimum value, that is, the preferred ratios and angles, of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

As per claim 10, 11 and 16, Schaming is silent on the material the nozzle tip is made of, however represents one having an elliptical discharge orifice (33) opening at a concave surface or concave area (36) of a front end, a tapered segment (at 33, figure 2) creating a conical flow path spreading at a predetermined taper angle towards the upstream side of the discharge orifice, and the concave surface (36) comprising an inclined sidewall which inclines inwardly (See Figure 2, at 35) in the radial direction towards the upstream side from the front end, as well as stated above, a possible ratio  $D1/D2$  of the inner diameter  $D1$  to the minor diameter  $D2$  of the discharge orifice is not less than three. Schaming discloses the claimed invention with the exception of the nozzle tip being made of cemented carbide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the tip out of

Art Unit: 3752

cemented carbide, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious choice. See *In re Leshin*, 125 USPQ 416.

### ***Allowable Subject Matter***

Claims 6 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

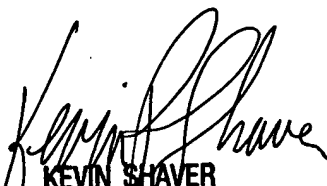
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Hogan whose telephone number is (571) 272-4902. The examiner can normally be reached on Mon-Fri, 7:00a-4:00p EST.

Art Unit: 3752

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSH  
11/28/2006

  
KEVIN SHAVER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700